



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/515,517	02/29/2000	Michael Lounsbery	1252.1044/JRB	1702
21171	7590	04/26/2004	EXAMINER	
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			WERNER, BRIAN P	
			ART UNIT	PAPER NUMBER
			2621	8

DATE MAILED: 04/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/515,517

Applicant(s)

LOUNSBERY, MICHAEL

Examiner

Brian P. Werner

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 January 2004.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 8 is/are allowed.  
6) ☒ Claim(s) 1-7 and 9-17 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. This Office Action is responsive to the amendment and arguments received on January 20, 2004. Claims 1-17 are now pending.

#### ***Claim Objections/Suggestions***

2. In claim 8, at line 4, it appears that "carted" should be "created". The term "carted" means to carry, and while awkward in the context of the claim, it is not indefinite or totally unclear. However, it would appear in the context of the disclosure that the "created" was intended. It will be left to the applicant's discretion whether or not this is the case.

#### ***Response to Arguments***

3. Applicant's arguments, see pages 6-8 of the response filed on January 20, 2004, with respect to the previous objections and 101 and 102 rejection(s) of the pending claim(s) have been fully considered and are persuasive. Therefore, the previous objection, 101 and 102 rejections are withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Kolarov et al. (US 6,144,773 A) below.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Kolarov et al. (US 6,144,773 A).

Regarding claim 9, a method of determining a unique identifier (the “record” of the “triangle” at column 17, line 57) for a new face of a mesh in a subdivision surface created by a new vertex (figure 6 depicts the subdivision of a base mesh “T” at numeral 610, into subdivisions; for example, a subdivision “T2” is created based on one existing vertex V2 at numeral 654, and two new vertices V1 and V2 numerals 660 and 658 respectively), comprising:

determining a base mesh face surrounding the new vertex (“T” is a face on the base mesh depicted at figure 2A for example; i.e., “triangle T 610 represents one of the triangles on the surface of a sphere 200 as shown in figure 2a” at column 17, line 35; “T” is also the base mesh from which T2 is subdivided as seen in figure 6; furthermore, “T” surrounds new vertex V1 at numeral 660 for example);

determining a vertex index of the new face (vertex "V2" at numeral 654 is the vertex index of new face "T2", because "T2" is named after "V2" at numeral 654; see "child triangles are named after the vertex that they retain from their parent" at column 17, lines 63-64);

determining a path to the new face ("pointers to its descendent triangles" at column 17, line 58; the base face "T" has pointers that define paths to all descendents, including triangle T2), and

combining the base mesh face, the vertex index and the path as the unique identifier (the "record" described at column 17, lines 57-63 uniquely identifies the newly created face "T2" according to the content of the record, the content including the "pointers" at column 17, line 58 that define the path, the base face name "T", and the vertex index "V2" at column 17, line 59; regarding the uniqueness, refer to "self-consistent and unambiguous" at column 18, line 16 and "unique triangle" at column 18, line 28).

Regarding claim 10, the subdivision level of the new face is determined (the face "T2" is a first subdivision level according to its nomenclature; e.g., "T" is the zero level, or coarsest level, and finer levels have the nomenclature depicted in figure 6, for example at numerals 620, 624, etc.).

Claims 11 and 12 are anticipated as described in the rejections of claims 9 and 10 above.

Regarding claim 17, an apparatus is disclosed (figure 8), and the faces may have an arbitrary number of sides ("the preceding scheme for subdivision may be generalized

Art Unit: 2621

to M-dimensional manifolds” at column 18, line 46; “any polygon” or “any polytope” at column 23, lines 26 and 27).

Regarding claim 13, a computer readable storage medium containing the subdivision data structure is disclosed (figure 8, numerals 708 and/or 704).

Regarding claim 14, refer to the claim 10 rejection above.

Regarding claims 15 and 16, unique vertex and edge names are provided (column 18, lines 1-25).

Claims 1, 2 and 7 are anticipated as described in the above rejections.

Regarding claim 3, the identifier (i.e., the “record” at column 17, line 57) is a fixed bit integer as each of the fields of the identifier (i.e., the pointers, vertices, parameterization and name as described at column 17, lines 58-61 are fixed; i.e., there are no variables that will change when the record is stored).

Regarding claim 4, leading zeros of any number are always ignored.

Regarding claims 5 and 6, refer to the rejection of claims 15 and 16 above.

### ***Allowable Subject Matter***

6. Claim 8 is allowed. The combination of interrelated elements recited therein are neither anticipated nor suggested by the prior art made clearly of record.

### ***Conclusion***

7. Applicant’s amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

Art Unit: 2621

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian P. Werner whose telephone number is 703-306-3037. The examiner can normally be reached on M-F, 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo H. Boudreau can be reached on 703-305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2621

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian Werner  
Primary Examiner  
Art Unit 2621  
April 20, 2004



**BRIAN WERNER**  
**PRIMARY EXAMINER**